THE TEACHING OF MATERIA MEDICA.

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In choosing a subject for a lecture introductory to a course of pharmacology and therapeutics, one naturally looks for some theme which is at once new and interesting; and at the present time there is no lack of such, for ceaseless activity is being shown in this department of medicine by numerous capable workers. Indeed, so much is this the case, that complaints are heard even from experts of their inability to cope with the mass of material which is being presented to them. Not only are numerous researches being made on the mode of action of well-established remedies, such as morphine, digitalis, and iron, but new drugs are constantly being discovered and presented to us for clinical examination, while the problems involved in the comparatively recent introduction of antitoxins in the treatment of infectious diseases, of the products of bacteria in the treatment of tuberculosis, and of the treatment by glands and their secretions, open up a wide field for active investigation and speculation. I use the word speculation advisedly, for without employing the imagination, and placing before our minds the possibilities and probabilities of the results to be attained by experiment and research in medicine, we should be left without any adequate aim or guidance in our work. I am well aware that it has often been maintained that an investigation should be undertaken and pursued without any preconceived theory; but this, I venture to say, is an impossibility for minds constituted as the human mind is, and even if it were possible is not desirable. Its absence would remove from our work the pleasures of hope, of anticipation, and in many cases of fruition, and would certainly diminish the keen interest taken in the work as it progresses and grows under our hands. The most brilliant investigations and discoveries in biology, as well as in other departments of science, have resulted from an idea, followed by a carefully planned investigation, and checked and modified by the results of the experiments undertaken to test its truth. A recent and most striking example of this is the voyage of Nansen to the North Pole, where a carefully thought-out theory led to a brilliant and successful result. In medicine, the localisation of brain disease, followed by surgical interference, affords us another example of the value of theory and scientific research as predecessors of practical progress. To-day, however, I do not propose to enter into any of these more fascinating aspects of contemporary work and thought in therapeutics, but propose rather to give you a necessarily brief and unambitious account of the past state and of the present scope and aims of the subject of Materia Medica and Therapeutics, intending it merely as an introduction to our work for the session. In doing so I especially wish to draw your attention to the close relationship which exists between pharmacology and therapeutics—that is to say, between the study of the action of remedies and practical medicine.

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[1] Introductory lecture, delivered at Glasgow University.

The name Materia Medica is a very old one in our medical schools, so old, indeed, that with the extension of the scope of the subject new terms have been required, and the old name, as used in the Scottish schools, has come to be merely a conventional and brief term to designate a number of closely allied and interdependent branches of medicine. Originally, and even till quite recently, however, the name denoted accurately enough the extent of the subject, which was held to include only a description of the appearance, source, and origin of the substances used in the treatment of disease. An acquaintance with their applications at the bedside, the best means of applying them, and the special forms in which they should be applied, was held to be a department of the practice of medicine, and was taught, or left untaught, by the professor of practice of physic. Anything more dreary to read, it would be difficult to imagine than the text-books on the subject which were put into the hands of students fifty or even fifteen years ago. Take a text-book such as Royle's "Materia Medica and Therapeutics," published in 1847, and much used in its day. To the subject of opium the author devotes 18½ pages, only 39 lines of which deal with the action and uses of the drug, the part which is really of importance to a doctor in practice; the rest of the space is occupied with minute and wearisome descriptions of the different kinds of opium, of its appearance, physical characters, and preparations, and the same plan is followed throughout with other drugs. Further, what is said about the action consists chiefly of a repetition of vague therapeutical terms, which convey no definite ideas to one's mind regarding the reasons for any effects the drug may exercise. No wonder that Charles Darwin looked back at his attendance on lectures on materia medica in Edinburgh as the most inexpressibly dreary experience of his life. This state of affairs is probably to a certain extent responsible for the very languid interest which a considerable section of our profession still manifest towards the treatment of disease by means of drugs.

Still, a book such as Royle's "Materia Medica" shows an immense advance on what had gone before, for even in comparatively recent English pharmacopœias one finds such remedial agents as the oil of dead men's bones, the excrement of dogs (*græcum album*), along with dried frogs, and extraordinarily complex mixtures, such as the famous *theriaca*, which sometimes contained no less than 127 different ingredients. Although from the time of Æsculapius, and probably long anterior, many active and powerful drugs, such as opium, mercury, iron, and scammony, were known and used with precision by physicians, yet alongside this were many curious remedial practices and agents. As in our own day, so at other times, the current theories of pathology have ruled therapeutic treatment to a large extent; and as these theories were often crude, to say the least, treatment was often correspondingly curious. Suffering and disease were attributed to demons, to occult influences, to the moon and stars, to the evil eye and to witchcraft; and accordingly amulets and protective charms were in much request, while "three scruples of the ashes of a witch, when she has been well and carefully burned at the stake, is a sure catholicon against the evils of witchcraft." Queen Anne was the last English sovereign who touched for the king's evil—scrofula. Sir Walter Scott relates that when a child he was wrapped in the skin of a freshly-killed sheep, to cure him of some ailment; and the late Dr. James Ross of Manchester told me that he had actually seen country people in Lancashire swallow young frogs alive, under the idea that they "purified the blood." They took them as a sort of cooling spring medicine. Now, although the times of Scott, and even of Queen Anne, are comparatively near to us, yet, as regards the progress of our ideas in the theory and practice of therapeutics, they are practically mediæval in date. It is within the last sixty years, and more especially within the last thirty of these, that there has taken place the great advance in the exactitude of our knowledge of the action of medicines. This is due mainly to two causes—

1. To advance in our knowledge of the pathology and symptoms of disease, which was soon followed by a healthy scepticism, which demands that whenever curative effects are claimed for any drug or remedial agent, proof of these must be given, and certain measures of precaution taken to test the accuracy of the conclusions. There has been, and is still, too much taken for granted in therapeutics. Mere opinion is often so skilfully presented that we are apt to accept it as fact, and too much stress is habitually laid on the circumstance that sick persons recover while drugs are being administered to them.

Even if they recover many times this is not necessarily more convincing proof, as it is so often held to be, because the medicine may have had nothing to do with the recovery, and a wrong hypothes is is justas false and misleading the thousandth time as it was the first.

2. The birth and growth of what is now called pharmacology. When, about sixty years ago, Magendie and others commenced to systematically investigate the action of medicines, it was soon seen that a fruitful field of inquiry had been opened up, and pharmacology has now taken its place as one of the sciences most directly auxiliary to practical medicine. Its aims may be described as twofold—

In the first place, it contented itself with being what I may call explanatory in its services to practical medicine. Coming on the field late in the day, it found many curative practices in vogue which were of undoubted efficacy. The reasons for these it set itself to explain by careful investigations of the actions of the remedial agents. Success has attended its efforts in the case of such drugs as strychnine and atropine, and most notably, perhaps, in the case of digitalis. Formerly this drug, because it slows the heart, was regarded as having a depressant action on that organ; now it has been proved to have a powerfully stimulant effect, and this conclusion has been reached purely by experimental research. It is patent to anyone that increased accuracy of knowledge in these directions leads at once to increased accuracy of the application of drugs in the treatment of disease. Much, however, still remains to be accomplished; and even in the case of such largely-used remedies as iodide of potassium, mercury, and arsenic, we find that a complete obscurity overhangs the mode in which many of their curative effects are accomplished.

The second great aim of pharmacology is the discovery and investigation of new drugs, and in this connection we owe to it such important and largely-used remedies as nitrite of amyl, chloral hydrate, antipyrin, and strophanthus, besides many others in everyday use. The action and probable scope of employment of all these substances were all worked out by experimental research before they were ever applied to the treatment of disease in human beings. In this field there is still a wide outlet for discovery and research, when we consider that many of our most useful drugs have often untoward effects which limit their usefulness. To take only one concrete example, a substitute for morphine, which would produce narcosis and analgesia without deranging digestion, would be an inestimable boon to suffering humanity.

In the midst of all this activity, it is impossible for the average physician, even if he have hospital beds, to keep himself fully abreast of what is going on. Further, most physicians have been trained as pathologists, not as therapeutists, and the absorbing interest of pathology, together with the great demands made by advances in methods of diagnosis and in the minute study of disease, leave them little time for the severe training necessary to master the methods of research in pharmacology and therapeutics. Hence it seems desirable that every teacher of therapeutics should be in active practice and should have hospital facilities for teaching, as it is only in this way that he can be in sympathy with the aims and requirements of the future practitioners who form the great bulk of his students. As regards the methods of clinical teaching, he cannot differ much from other teachers; but it goes without saying that the chief point of view will be towards treatment. It is necessary in all clinical teaching to ascertain accurately the condition of the patient, and to determine the extent of deviation from the normal; but, having proceeded so far, therapeutical rather than pathological considerations will come to the forefront. It then comes to be considered how far these deviations are capable of being rectified by the means at our disposal, and we find that many of our patients can be restored to perfect health, others can only be relieved, while certain cases are hopeless. The advantage of clinical as contrasted with mere class-room instruction is that, under the eyes of the student, remedial measures are undertaken, sometimes with success, sometimes with partial or complete failure. In either case, however, the student has had an experience, conducted after an exact and careful method, and he learns that the results of treatment are not a lucky chance, but the necessary consequences of knowledge and a carefully thought-out plan. It is certainly of advantage for the young doctor that he should have this experience in his student days, and not after his entrance into practice.